

CLAIMS

What is claimed is:

1. An arrangement for treatment of rhythm disturbances, especially tachycardia and fibrillation, of a heart, comprising:
 - a device for detecting the heart rhythm and determining when a fibrillation threshold limit is exceeded; and
 - a therapy device, connected to the heart rhythm detecting device, to begin to treat the fibrillation when the fibrillation threshold limit is exceeded;
 - wherein the heart rhythm detecting device determines whether a redetection threshold limit is still exceeded after the therapy device has treated the fibrillation, the redetection threshold limit being lower than the fibrillation threshold limit and higher than a tachycardia threshold limit, and
 - wherein the therapy device continues to treat the fibrillation as long as the heart rhythm detector determines that the redetection threshold limit is exceeded.
2. The arrangement of claim 1, wherein the therapy device delivers a series of electrical impulses to the heart.
3. The arrangement of claim 1, wherein
 - the heart rhythm detector detects an atrial fibrillation and
 - the therapy device treats the atrial fibrillation.
4. The arrangement of claim 2, wherein
 - the heart rhythm detector detects an atrial fibrillation and
 - the therapy device treats the atrial fibrillation.
5. The arrangement of claim 2, wherein
 - the heart rhythm detector comprises an electrode that is situated in a region of an atrium of the heart to detect the electrical activity thereof, and

the therapy device is connected to the atrial electrode to deliver electrical impulses to the atrium.

6. The arrangement of claim 1, wherein
the heart rhythm detector detects a ventricular fibrillation and
the therapy device treats the ventricular fibrillation.
7. The arrangement of claim 2, wherein
the heart rhythm detector detects a ventricular fibrillation and
the therapy device treats the ventricular fibrillation.
8. The arrangement of claim 3, wherein
the heart rhythm detector detects a ventricular fibrillation and
the therapy device treats the ventricular fibrillation.
9. The arrangement of claim 4, wherein
the heart rhythm detector detects a ventricular fibrillation and
the therapy device treats the ventricular fibrillation.
10. The arrangement of claim 5, wherein
the heart rhythm detector detects a ventricular fibrillation and
the therapy device treats the ventricular fibrillation.
11. The arrangement of claim 6, wherein
the heart rhythm detector comprises an electrode that is situated in a region of a ventricle
of the heart to detect the electrical activity thereof, and
the therapy device is connected to the atrial electrode to deliver electrical impulses to the
ventricle
12. The arrangement of claim 7, wherein

the heart rhythm detector comprises an electrode that is situated in a region of a ventricle of the heart to detect the electrical activity thereof, and

the therapy device is connected to the atrial electrode to deliver electrical impulses to the ventricle

13. The arrangement of claim 8, wherein

the heart rhythm detector comprises an electrode that is situated in a region of a ventricle of the heart to detect the electrical activity thereof, and

the therapy device is connected to the atrial electrode to deliver electrical impulses to the ventricle

14. The arrangement of claim 9, wherein

the heart rhythm detector comprises an electrode that is situated in a region of a ventricle of the heart to detect the electrical activity thereof, and

the therapy device is connected to the atrial electrode to deliver electrical impulses to the ventricle

15. The arrangement of claim 10, wherein

the heart rhythm detector comprises an electrode that is situated in a region of a ventricle of the heart to detect the electrical activity thereof, and

the therapy device is connected to the atrial electrode to deliver electrical impulses to the ventricle

16. The arrangement of claim 1, wherein the heart rhythm detector further comprises:

a means to determine a heart activity limit and detect whether the heart activity exceeds the fibrillation threshold limit or the redetection threshold limit.

17. The arrangement of claim 2, wherein the heart rhythm detector further comprises:

a means to determine a heart activity limit and detect whether the heart activity exceeds the fibrillation threshold limit or the redetection threshold limit.

18. The arrangement of claim 11, wherein the heart rhythm detector further comprises:
a means to determine a heart activity limit and detect whether the heart activity exceeds the fibrillation threshold limit or the redetection threshold limit.
19. The arrangement of claim 12, wherein the heart rhythm detector further comprises:
a means to determine a heart activity limit and detect whether the heart activity exceeds the fibrillation threshold limit or the redetection threshold limit.
20. The arrangement of claim 13, wherein the heart rhythm detector further comprises:
a means to determine a heart activity limit and detect whether the heart activity exceeds the fibrillation threshold limit or the redetection threshold limit.
21. The arrangement of claim 14, wherein the heart rhythm detector further comprises:
a means to determine a heart activity limit and detect whether the heart activity exceeds the fibrillation threshold limit or the redetection threshold limit.
22. The arrangement of claim 15, wherein the heart rhythm detector further comprises:
a means to determine a heart activity limit and detect whether the heart activity exceeds the fibrillation threshold limit or the redetection threshold limit.
23. The arrangement of claim 16, wherein the heart rhythm detector further comprises:
the heart activity limit-determining means uses at least one of a plurality of heart activity parameters to determine the heart activity limit.
24. The arrangement of claim 23, wherein the heart activity parameter used is heart rate.
25. The arrangement of claim 23, wherein the heart activity parameter used is instantaneous rate of change in heart rate.
26. The arrangement of claim 23, wherein the heart activity parameter used is the difference between auricular activity and heart chamber activity.

27. The arrangement of claim 1, wherein:
the heart rhythm detector determines when a tachycardia is occurring, and
the therapy device begins to treat the tachycardia when the tachycardia is detected.
28. The arrangement of claim 4, wherein:
the heart rhythm detector determines when a tachycardia is occurring, and
the therapy device begins to treat the tachycardia when the tachycardia is detected.
29. The arrangement of claim 27, wherein
the heart rhythm detector determines that a tachycardia is occurring when the tachycardia
threshold limit is exceeded, when the fibrillation threshold rate is exceeded and also when the
redetection threshold limit is exceeded.
30. The arrangement of claim 28, wherein
the heart rhythm detector determines that a tachycardia is occurring when the tachycardia
threshold limit is exceeded, when the fibrillation threshold rate is exceeded and also when the
redetection threshold limit is exceeded.
31. The arrangement of claim 27, wherein:
the therapy device is designed so that no tachycardia treatment is performed during a
fibrillation treatment.
32. The arrangement of claim 28, wherein:
the therapy device is designed so that no tachycardia treatment is performed during a
fibrillation treatment.
33. The arrangement of claim 31, wherein
the heart rhythm detector is designed so that the redetection threshold limit is ignored,
when a fibrillation is determined after either a fibrillation or a tachycardia treatment is started.

34. The arrangement of claim 32, wherein
the heart rhythm detector is designed so that the redetection threshold limit is ignored,
when a fibrillation is determined after either a fibrillation or a tachycardia treatment is started.
35. The arrangement of claim 33, wherein
the therapy device treats an observed tachycardia through overdriving at a stimulation
frequency.
36. The arrangement of claim 34, wherein
the therapy device treats an observed tachycardia through overdriving at a stimulation
frequency.
37. The arrangement of claim 35, wherein
the therapy device is designed so that the overdriving stimulation frequency is in the
range of 10 to 50 beats/minute higher than a frequency of the observed tachycardia.
38. The arrangement of claim 36, wherein
the therapy device is designed so that the overdriving stimulation frequency is in the
range of 10 to 50 beats/minute higher than a frequency of the observed tachycardia.
39. The arrangement of claim 35, wherein
the therapy device is designed so that the overdriving stimulation frequency is increased
in the absence of a successful treatment.
40. The arrangement of claim 36, wherein
the therapy device is designed so that the overdriving stimulation frequency is increased
in the absence of a successful treatment.
41. The arrangement of claim 37, wherein
the therapy device is designed so that the overdriving stimulation frequency is increased
in the absence of a successful treatment.

42. The arrangement of claim 38, wherein
the therapy device is designed so that the overdriving stimulation frequency is increased
in the absence of a successful treatment.